ROYAL ASTRONOMICAL SOCIETY.

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REV. RICHARD SHEEPSHANKS in the Chair.

Wm. Huggins, Esq. 97 Gracechurch Street; and
John Hamilton, Esq. Aylesbury,

were balloted for and duly elected Fellows of the Society.

Professor Hansen, the Editor of the *Astronomische Nachrichten*, lately informed the Astronomer Royal that it had been found necessary to discontinue the transmission of the numbers of the *Astronomische Nachrichten* to England by Post, in consequence of the heavy charge made on them by the subordinate officers of the Post-Office, who insisted on considering them as letters, and requiring the letter-postage. The Astronomer Royal referred the matter to the Secretary of the Post-Office, and has the pleasure to communicate to the members of the Royal Astronomical Society the answer which he has received, as follows:—

"*General Post-Office, 2d May*, 1854.

"Sir,—With reference to your communication of the 20th ultimo, I beg leave to inform you that the publication in question is not liable to any charge in this country.

"If you have in your possession a copy which has been charged with postage as stated, I shall be glad if you will forward it to this office for inspection.—I am, Sir, your obedient, humble Servant,

"J. P. GODBY,
"For the Secretary.

"*Professor Airy,*
"*Royal Observatory, Greenwich.*"

The Astronomer Royal trusts that after this clear statement no difficulty will be experienced by any English astronomer in receiving the *Astronomische Nachrichten* without charge. If, however, the letter-postage be demanded, it will be best to receive the number of the *Astronomische Nachrichten*, and to pay the postage, and then to communicate the circumstances to the Secretary of the Post-office, referring to the assurance contained in the letter above.

Observations of Comet II., 1854, *made with the Northumberland Equatoreal at the Cambridge Observatory.*

1854.	Green. M.T. h m s	R.A. h m s	Par. Corr. × Δ. s	N.P.D. ° ′ ″	Par. Corr. × Δ. ″	No. of Comps.	Star
March 29	8 12 55·6	1 6 27·7	.....	70 12 35	.....	1	
30	7 41 46·1	1 21 42·37	+0·363	70 21 44·3	−6·75	7	*a*
31	7 42 15·6	1 37 3·57	+0·364	70 44 19·4	−6·68	5	*b*
April 1	7 56 40·8	1 52 8·24	+0·364	71 18 0·9	−6·72	6	*c*
3	7 57 32·8	2 20 17·58	+0·365	72 49 37·1	−6·61	7	*d*
4	7 50 20·8	2 33 16·97	+0·365	73 43 56·2	−6·53	2	*e*
5	8 16 7·4	2 45 48·03	+0·362	74 43 0·4	−6·67	2	*f*
	8 25 49·1	2 45 52·44	+0·360	74 43 15·8	−6·72	1	*g*
6	8 5 10·4	2 57 15·39	+0·362	75 42 27·6	−6·58	3	*h*
7	7 56 16·8	3 8 1·81	+0·361	76 43 25·3	−6·52	10	*i*
8	8 9 13·2	3 18 14·83	+0·359	77 44 52·0	−6·59	12	*k*

The position of March 29 is very rough, the comet being near setting.

Assumed Apparent Places of the Stars.

	Apparent R.A. h m s	Apparent N.P.D. ° ′ ″	Catalogue.
a	1 18 28·23	70 41 24·4	B.A.C. 430
b	1 34 33·24	70 26 37·8	B.A.C. 523
c	1 54 17·51	71 19 7·1	Rümker 512
d	2 22 47·31	72 56 43·6	Green. 12-yr. Catalogue
e	2 37 34·70	73 35 57·3	H.C. 5099
f	2 49 18·96	74 17 48·3	Rümker 751
g	2 50 7·02	74 35 46·4	Rümker 755
h	2 58 32·76	75 47 37·7	Bessel ii. 1037
i	3 8 20·34	76 41 30·6	Bessel iii. 139
k	3 19 15·22	77 46 37·6	Rümker 858

The places of the Catalogues are adopted.

J. Challis.

Observations of the Comet made at the Observatory of Redhill.

1854.	Green. M.T. h m s	R.A. h m s	Log $\frac{p}{P}$	N.P.D. ° ′ ″	Log $\frac{q}{P}$	Stars.
Mar. 29	8 0 13·8	1 6 20·84	+8·620	70 12 40·7	−9·9049	*a*,
30	7 57 12·6	1 21 53·18	8·629	70 22 2·4	9·8982	*b*, *c*,
31	7 32 8·0	1 36 56·05	8·643	70 44 4·5	9·8807	*d*, *e*,
	7 45 4·7	1 37 5·17	8·639	70 44 16·8	9·8871	*e*, *f*,
April 1	7 28 8·0	1 51 51·08	8·644	71 17 11·8	9·8741	*g*,
	8 11 4·0	1 52 17·64	8·631	71 18 27·9	9·8950	*h*, *i*,
3	8 18 36·1	2 20 30·62	+8·633	72 50 8·8	−9·8907	*k*.

Corrected for refraction.

Assumed Mean Places of the Stars, 1854·0.

		h m s	o ′ ″
a	B.A.C. 348	1 3 36·90	69 44 35·4
b	Bessel Z. 200	1 15 32·28	70 17 40·5
c	— —	1 26 52·98	70 34 28·7
d	B.A.C. 523	1 34 34·87	70 26 32·1
e	— 533	1 36 57·70	70 38 50·9
f	Lalande 3188	1 36 55·81	70 52 38·4
g	B.A.C. (572...3)	1 45 31·53	71 25 21·2
h	Bessel Z. 200	1 48 16·38	70 58 59·3
i	— 332	1 54 19·45	71 19 2·0
k	B.A.C. 771	2 22 48·93	72 56 35·9

" The above observations were taken by noting the times of passage for comet and star over two bars at right angles, whose inclination to a parallel ($\alpha = 44^\circ 47'$) was deduced from our observations of the sun, according to the method explained in the last *Monthly Notice*.

" Corrections for hourly motion of the comet while passing from one bar to the other were applied, by adding to its R.A. the quantity

$$-\tfrac{1}{2}(P_b - P_a) \cdot \varkappa,$$

and by multiplying the quantity C D for the comet by the additional factor

$$\frac{3600}{3600 + I} \cdot (1 - \varkappa^2)$$

where I = hourly motion in R.A., I′ in N.P.D., and $\varkappa = \dfrac{I'}{3600 \cdot 15 \cdot \sin \delta}$.

" The hourly motions were taken from an ephemeris computed for the purpose from the elements given in the last *Notice*. The perihelion passage is there incorrect from a fault of my own: it should have been March $24^d \cdot 12742$.

" N.B. The observation on March 29 was taken at nearly 87° zenith distance. R. C. Carrington.

" 1854, *April* 28."

Extract of a Letter from Prof. Argelander to the Astronomer Royal, dated April 7, 1854, accompanying two sets of Elements, and an Ephemeris of the Comet now visible.

" Without doubt you will before this time have found the fine comet, which is now visible in the evening twilight. But under the uncertainty whether the weather has been sufficiently favourable to enable you to obtain a competent number of observations for the determination of an orbit, I take the liberty to forward to you two sets of elements which have been computed, the first by M. Schönfeld, the second by M. Krüger and M. Förster, together with an ephemeris based on the latter elements.* The near agreement of

* A few copies of this ephemeris were printed off and distributed among the various observers in the country.

the two sets warrants a favourable judgment on their correctness, although the first observation by Luther on which they are based, is not very certain. Still we have preferred this to our own observation, since we were not able to observe the comet, which was discovered by M. Krüger on March 30, in a satisfactory manner, till April 2. On the preceding days clouds permitted only some rough estimations of its place.

Elements of the Second Comet of 1854.

	By Schönfeld. From Bilk Obs. of April 1, and Bonn Obs. of April 2 and 3. T. Mar. 24·0029, M.T. Berlin.	By Krüger and Förster. From Bilk Obs. of April 1, and Bonn Obs. of April 3 and 5. Mar. 24·0336, M.T. Berlin.
	° ′ ″	° ′ ″
π	215 7 33	214 37 21
Ω	316 2 21	315 42 0
i	83 53 40	84 19 44
log q	9·43873	9·43904
	Motion retrograde.	

"This comet is *not* identical with that of Brorsen, discovered on March 16, in R.A. $2^h\ 30^m\ 12^s$, and Decl. $+1°\ 11'·2$, since the present comet, at the time of Brorsen's observation, was in R.A. $22^h\ 57^m$, and Decl. $+5°$."

Extract of a Letter from M. Laugier to Mr. Hind.

"Allow me to send you the observations of the new comet which I have made conjointly with MM. Charles Mathieu and Ernest Liouville.

"The place of observation, situate at No. 183 Rue de Vaugiraud, Paris, is 2^s to the west, and $24''$ north of the observatory. The equatoreal employed is by M. Brunnen, artist of the Board of Longitudes, who placed it at our disposal. The whole of the observations are corrected for refraction.

1854.	Paris M.T. h m s	Comet's R.A. h m s	Comet's Decl. ° ′ ″
March 31	7 21 43	1 36 44·14	+19 16 20·3
April 1	7 19 11	1 51 39·65	18 43 8·6
2	7 29 28	2 6 11·75	18 0 31·2
3	7 54 16	2 20 11·80	17 10 41·0
5	7 46 50	2 46 13·24	15 15 6·3
6	7 51 18	2 57 4·54	14 17 7·8
7	7 39 56	3 7 49·95	13 18 0·4
8	7 40 13	3 17 59·68	12 16 29·0
9	7 48 56	3 27 18·74	11 15 32·9
10	7 55 19	3 36 13·10	10 15 43·4
13	7 55 30	3 59 45·06	7 28 14·8
15	8 13 27	4 13 3·67	+ 5 45 17·6

Elements and Ephemeris of the Second Comet of 1854.
By J. R. Hind, Esq.

"From three observations of the new comet, taken at Mr. Bishop's Observatory on the evenings of March 29th and April 1st and 4th, I have calculated the following elements of its orbit:—

Perihelion Passage, 1854, March 24.

Longitude of Perihelion	213 47 32	True Eq^{x} April 0.
Ascending Node	315 27 53	
Inclination.....	82 23 54	
Log of least Distance	9·4427392	

Motion retrograde.

"These elements have some slight resemblance to those of the second comet of 1799, observed by Mechain at Paris about Christmas in that year; but the similarity is not sufficiently great to justify a suspicion of identity.

"On the 29th of March, when the comet was generally observed throughout this country, its appearance was finer than that of the one visible in August last; the nucleus was brighter than stars of the second magnitude, and the tail could be traced through a space of 4° or upwards. At the beginning of the present month the tail was very sensibly curved.

"The following places of the comet have been computed from the above elements:—

At Greenwich Mean Noon.

1854.	Comet's R.A. h m s	Comet's N.P.D. ° ′	Log Δ.	Log *r*.
April 12	3 50 2	81 20·2	9·9941	9·7947
13	3 57 27	82 14·8		
14	4 4 25	83 7·4	0·0133	9·8254
15	4 10 56	83 57·9		
16	4 17 5	84 46·3	0·0326	9·8539
17	4 22 53	85 32·6		
18	4 28 21	86 16·9	0·0519	9·8803
19	4 33 32	86 59·2		
20	4 38 26	87 39·6	0·0709	9·9049
21	4 43 6	88 18·2		
22	4 47 32	88 55·2	0·0893	9·9279
23	4 51 46	89 30·6		
24	4 55 49	90 4·5	0·1071	9·9494
25	4 59 41	90 37·0		
26	5 3 23	91 8·0	0·1243	9·9667
May 6	5 33 52	95 22·1	0·2009	0·0558

"The co-ordinate constants (true equinox, April 15) are as subjoined:—

$$x = r \,.\, [9{\cdot}8566309] \,.\, \sin\,(340^\circ\ 54'\ 43'' + v)$$
$$y = r \,.\, [9{\cdot}9049116] \,.\, \sin\,(205^\circ\ 7'\ 0'' + v)$$
$$z = r \,.\, [9{\cdot}9615897] \,.\, \sin\,(96^\circ\ 5'\ 14'' + v)$$

"*Mr. Bishop's Observatory*, 1854, *April* 12."

Observations of Comet II., 1854, *made at Markree Observatory.*

Green. M.T. 1854.	R.A. h m s		Decl. ° ′ ″	
April 14·380856	4 6 56·54	+[9·5281]÷Δ	6 33 11·4	+[0·8370]÷Δ
15·371142	4 13 16·36	[9·5262]	5 44 2·4	[0·8353]

Mean Places of Compared Stars, 1854·0.

	h m s	° ′ ″	
April 14	4 1 38·765	6 20 23·3	Weisse 4^h 2
15	4 12 54·49	5 46 42·85	Rümker, 4^h 1160

The result on April 14 is from three observations by Mr. Cooper, that on April 15th is from three by Mr. Cooper and three by Mr. Graham.

The respective results on April 15, reduced by my ephemeris to the mean time, are,—

h m s	° ′ ″	
4 13 16·45	5 44 3·27	E. I. C.
4 13 16·28	5 44 1·62	A. G.

My first rough orbit still gives the comet's place with very tolerable accuracy.

Last night (April 17th) low clouds covered the comet.

A. Graham.

Markree Observatory, April 18, 1854.

Elements of Comet II. 1854.

Professor Littrow has forwarded the following elements of the comet, which he very obligingly accompanied with an ephemeris, extending from April 1 to May 4; but, as the latter does not differ materially from similar communications received from other sources, and which had already been in type, it has not been deemed necessary to publish it. Prof. Littrow remarks that the comet has no connexion either with the bright nebulous object seen by M. Brorsen on the 16th of March, or with the comet of 1556, and seems to be new.

Elements of the Comet computed by M. Hornstein.

Perihelion Passage, 1854, March 24·06022 M.T. Berlin.

Longitude of Perihelion	213° 47′ 55·4	App. Equinox,
Longitude of Node	315 26 49·8	1854, April 3.
Inclination	82 22 40·9	
Log Perihelion Distance	9·4425544	

Motion retrograde.

These elements are computed from four observations of Vienna of the 1st, 2d, 4th, and 5th of April. The following are the outstanding deviations from the observations:—

	Obs. — Cal.	
	$d.l$	$d.\lambda$
	"	"
April 1	0·0	0·0
2	−4·9	+6·1
4	+8·0	−2·1
5	0·0	0·0

Observations of Comet II. 1854. By T. W. Burr, Esq.

"Although the Society will no doubt be furnished with numerous observations of the new comet, far superior in accuracy to any I can offer, I am nevertheless induced to forward those I have made, in case they may by chance be useful in filling up a vacancy in the series, and thus aid in completing our knowledge of so interesting a body.

1854.	Green. M.T. h m s	R.A. h m s	N. Decl. ° ′	Bar.	Ther.
March 30	7 33 25	1 21 36·4	*19 40	30·28	54
	7 44 6	1 21 55·4	...	...	...
31	7 56 10	1 37 25·4	*19 22	30·37	62
	8 2 19	1 37 31·4	...	...	...
April 1	7 29 18	1 51 52·3	*19 12	30·28	60
	7 31 49	1 51 55·3	...	...	...
	7 49 51	1 52 4·3	...	...	...
3	7 2 25	2 20 4·4	17 12	30·52	56
	7 33 46	2 20 22·4	...	...	...
	7 54 28	2 20 36·4	...	...	...
4	7 26 10	2 33 0·3	16 18	30·42	...
	7 32 4	2 33 7·8	...	...	...
	8 12 29	2 33 39·3	...	...	54
5	7 21 15	2 45 28·8	15 17	30·36	58
	7 36 46	2 45 35·8	...	...	...
6	7 28 51	2 57 6·3	14 20	30·38	...
	7 47 20	2 57 19·3	...	...	...
	8 18 29	2 57 35·3	...	...	56
9	7 54 31	3 27 52·4	11 17	30·21	58
	8 24 0	3 28 0·4	...	...	56

* "These observations in declination are probably incorrect, as on the 2d of April I discovered that the verniers of the circle were loose and shifting. They were then properly fixed and adjusted."

March 30. Very fine with naked eye.
31. Seen with difficulty among clouds.
April 1. Fine views without telescope.
3, 9. Not visible to naked eye during observations.

"The observations are not corrected for refraction, which would of course act powerfully on a body so near the horizon, nor for any other cause of alteration in position except instrumental errors. I have therefore added the atmospheric pressure and temperature for each evening. The barometer is about 85 feet above Trinity high-water mark. Approximate latitude and longitude, 51° 33′ 45″ N., and $23^{s}.8$ W.

"The instrument used was the equatoreal mentioned in a previous notice of mine respecting *Saturn's* rings. It is by Ross, of 4 feet focal length, and $3\frac{1}{8}$ inches aperture, and has a Fraunhofer mounting. It reads only to 4^{s} in right ascension, and single minutes in declination, and the observations may therefore vary within those limits, though sometimes careful estimations of smaller distances have been attempted. The clock error was determined by several transits each evening prior to and during the observations on the comet.

"Having no catalogue at hand but the *Nautical Almanac*, and the daylight being generally so strong as to prevent small stars in the neighbourhood being visible, I have been compelled to use *α Arietis* during the first three days' observations, and the same star and *η Tauri* in later ones, as stars of comparison.

"On the 3d April the comet was found in the telescope at $6^{h}\ 55^{m}$ G.M.T., when the sun had only set about 20 minutes, and the light was therefore very strong. The planet *Saturn*, which was looked at for comparison, was distinguishable, with about the same facility as the comet, both being faint objects, while *Aldebaran* was very bright and easily seen.

"The nucleus of the comet was throughout of a golden tint, apparently 10″ or 12″ in diameter, and enveloped in the coma which extended round it on the side nearest the sun, while the tail stretched in the opposite direction, and was continued with nearly parallel sides and of a brush-like character of rays to some distance. It has lately become somewhat more divergent in appearance, but has not to my eye assumed a curvature at all. On the 30th March the tail was estimated by the unassisted eye to be about 2° in length, and upon measuring it by means of the declination circle it was found to be quite $1^{\circ}\frac{1}{2}$. On the 1st April only 1° could be thus seen, but the evening was lighter and the moonlight stronger. The same causes have conspired still further to diminish the comet's brilliancy and the length of the tail, and on the 4th instant only 15′ could be traced, but besides these causes of apparent diminution, the intrinsic brightness of the nucleus is really much impaired, as is shown by comparison with stars which it formerly equalled or surpassed in lustre. This was well proved on the 9th April, when *α Arietis* was visible some time before the

comet could be discovered, although the star was in much the more unfavourable position with regard to the twilight."

Extract of a Letter from J. C. Adams, Esq., to the Editor.

"Probably you will have plenty of elements of the comet which is now starring it, nevertheless I may mention the following, which I deduced from Professor Challis's observations on March 30, April 1, 3. A comparison of these elements with an observation on April 7, gave an error of only 10″ in longitude, and nothing in latitude, so that they are probably not far from the truth.

Perihelion Passage, March 24·01221, G.M.T.

	°	′	″
Longitude of Perihelion	213	51	32
— Ascending Node	315	29	52
Inclination	82	34	28
Log Perihelion Distance	9·4426170		

Motion retrograde.

Note on the Zodiacal Light, the Companion of Procyon, and Sirius. By the Rev. T. W. Webb.

"Since my former communication on the subject of the zodiacal light, I have noticed two instances of it which offered appearances somewhat unusual.

"1853, Dec. 30. As soon as twilight had disappeared, the zodiacal light was faintly but very evidently perceived. Had it been more distinct, I thought it would have presented a very curious appearance; but its want of brightness rendered me less certain than I could have wished. Its general character, however, seemed to be that of two or three slender tapering streams, forming altogether but a narrow cone, much fainter than the galaxy, though in a beautifully clear evening, and extending towards, if not to, the stars in *Aries*.

"1854, Feb. 25. About $8^h\ 15^m$ there was a fine bright zodiacal light, passing between the stars of *Aries*, and extending towards, or perhaps reaching as far as *Saturn*; the termination, however, was very uncertain. It was very bright as compared with the galaxy, and did not appear double or divided into streams. I once or twice fancied that the south edge was best defined, but could not satisfy myself of the fact; I had, however, a stronger suspicion that the whole beam of light was a little concave towards the north pole.

"I regret to find that the observation of the companion of *Procyon*, which appeared in vol. xiii., No. 9, of the *Monthly Notices*, is of no value. I have since remarked that the principal

star is surrounded by several small attendants, and it does not appear to which of them the observation in question may have referred.

"However strong may be the evidence in favour of a change in the colour of *Sirius*, I am not aware that any suspicion has been entertained of its light being variable. I cannot, however, divest myself of an impression that it has been more brilliant during the late winter than in the preceding one, or perhaps for several recent seasons; and more like what I seem to recollect it many years ago.

"*Tretire, March* 16, 1854."

Extract of a Letter from W. Lassell, Esq., to the Editor.

"In the *Monthly Notice* for March I observe some remarks, with two engravings of the planet *Mars*, from J. W. Grant, Esq., tending to show the great superiority of the climate of Calcutta over that of England. I can well believe that to be the case, but on reference to the circumstances of the last two oppositions of the planet, I find them so different that the striking inferiority of the English picture must by no means be laid entirely to the account of the English telescope or climate.

"At the opposition of *Mars* in 1847, its distance was only 43 millions of miles, and its apparent diameter nearly 20″; while at the opposition of this year he was 64 millions of miles off, and subtended an angle of only about 13″. Again, the meridian altitude at Calcutta, at the first epoch, would be about 81°, and at Greenwich at the latter epoch the altitude would be only about 51°. I do not consider that in a tolerable state of atmosphere the difference between 50° and 80° of altitude would very materially affect the vision; but the greater proximity of the planet in 1847 would tell most strikingly, and might lead to a very erroneous judgment of the telescopes pointed to it under circumstances so widely different. There is also another condition which should not be overlooked. There is generally a certain quantity of light with which a telescopic object is best seen; the phenomena of the disc of *Mars*, especially, require this condition, and it is, I think, very possible, that if the power applied to the large telescope was not very greatly superior to that of the small one, the minute lineaments visible in the latter might be quite drowned in the flood of light afforded by the large telescope. It is, I believe, a good maxim in scrutinising the minutiæ of planets, to employ pretty high powers, with only such an amount of light as is sufficient adequately to stimulate the eye; and by this means the effect of atmospherical disturbance (generally in some proportion to the aperture) is reduced to a minimum.

"*Starfield, 25th April*, 1854."

Occultation of 42 Leonis, of 3579 B.A.C., of i Leonis, and of the Planet Mars, observed at Ashurst. By Robert Snow, Esq.

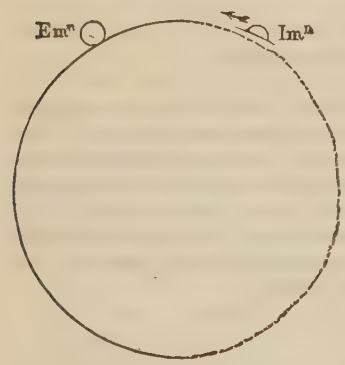
" 51° 15′ 58″ N. Lat. 1^{m} 10^{s} W. Long.

"(1.) 42 *Leonis.* Immersion at 7^{h} 26^{m} 53^{s}·6, corrected sidereal time for the place. The moon being over thirteen days old, and excessively bright, gave an uncertainty to the observation, though the immersion took place at the dark limb. The emersion took place at the bright limb, but could not be observed; for the star was quite imperceptible, until it had quitted the moon's edge for some little distance. The definition of bright stars was far from good all the early part of the evening.

"(2.) 3579 B.A.C. Immersion at 11^{h} 48^{m} 34^{s}·6, corrected sidereal time. Well seen, and well observed. Again, the emersion could not be observed on account of the star being overwhelmed in the moon's splendour.

"(3.) *i Leonis* also approached the moon's edge very nearly, about the time set down in the *Nautical Almanac.*

"(4.) The planet *Mars* and the moon, agreeably to the time predicted, being now not far asunder, the telescope (a 5-foot equatoreal by Simms, of 4 inches aperture) was turned on the planet, and different magnifying powers tried; but the planet was not seen well with powers higher than 76; which, accordingly, was used in the observation. The state of the air, however, seemed to be gradually improving; for, although the planet now and then waved and fluttered, it might almost be said, like a pennon, yet again its roundness kept returning very satisfactorily. It was of almost precisely the same colour as the moon; and in the most favourable moments I could not help comparing it to a spangle on the face of the sky. When first the planet began to be hidden by the moon's dark edge, then its beautiful definition became disturbed, and I imagined that a violet light, not perceived before, was thrown from it, towards the left hand, in the direction of the little arrow drawn in the accompanying figure. However, I am inclined to attribute this appearance rather to a fatigued and nervous state of the eye, or to the caprice of our own atmosphere, than to the effects of the atmospheres (if such exist) of the moon, or the planet *Mars.* For the above confused impressions only lasted for a few seconds; and when the planet was rather more than half hidden, its previous distinct sphericity seemed to return; and whilst it was slowly and solemnly vanishing, it gave for several seconds the notion of its being the summit of a lunar mountain, but melting



gradually away. For there were two pointed illuminated summits, standing out at the moon's ragged edge hard by; and the brightness and tint of the last fraction of the planet was precisely the same as theirs.

"The immersion began at $14^h\ 33^m\ 36^s$ corrected sidereal time, and, as stated above, was not observed to a certainty. The planet was half hidden at $14^h\ 33^m\ 56^s{\cdot}6$, corrected sidereal time, and was quite hidden, and well seen to the last speck, at $14^h\ 34^m\ 36^s{\cdot}6$, corrected sidereal time.

"Although the above observations give 60^s for the duration of the immersion, I should be inclined to say that perhaps 70^s would be nearer the truth.

"At the emersion, I never remember a more beautiful sight than the planet rising majestically from the moon's bright edge, without the slightest distortion from its circular form. It was now quite steady and round; and the idea of the silvery *spangle* returned stronger than before. Not the slightest perceptible change of shape took place in the planet during the time occupied in quitting the moon's bright edge. Nothing whatever was to be seen of the two bodies clinging together, as it were, by threads of light; nothing of the pear-shaped appearance often recorded as put on by planets under similar circumstances. The whole phenomenon was undisturbed, and clear and sharp as a delicate engraving.

"*Mars* began to reappear at $14^h\ 58^m\ 1^s$, corrected sidereal time, at the bright limb of the moon, and just cleared it at $14^h\ 58^m\ 57^s{\cdot}6$, thus giving 56^s for the time occupied in the re-appearance.

"This last observation was perfectly satisfactory. From the observations of both immersion and emersion, the planet was hidden by the moon for $24^m\ 31^s{\cdot}5$. It may be added that the night was quite cloudless, and that the clock-error was very nicely determined. The clock is both visible and audible from the equatoreal, as well as from the transit instrument, which has always been found to be a great practical convenience.

"*March* 12, 1854."

Occultation of ε Geminorum.

The immersion of ε *Geminorum* took place at the moon's dark limb, at $13^h\ 43^m\ 29^s$, corrected sidereal time for the place. The star did not vanish quite instantaneously, but seemed suddenly to become of half its brightness or magnitude, and in the next moment was totally gone. The emersion took place at the moon's bright limb, at $13^h\ 15^m\ 42^s$, corrected sidereal time. The star rose almost with a small planetary disk, so to speak, and occupied about 5^s before it was quite detached from the limb.

Ashurst, April 4th, 1854.

Occultation of the Planet Mars observed at Islington.
By Warren De La Rue, Esq.*

"March 12th, 1854, observed the occultation of *Mars* by the moon with my 13-inch reflector, and with a power of 150.

	h	m	s	
The first contact took place at	14	33	19·5	Sidereal Time.
Complete eclipse	14	34	20	

"On the instant of contact the dark limb of the moon became distinctly visible. The eclipse of the planet was gradual, and afforded no indication of inflexion of light: the event was observed until it could have occupied only a very small fraction of a second of arc in breadth, as the atmosphere was beautifully steady at the time. The epoch of emersion was lost."

Extract of a Letter from J. Hippisley, Esq., to the Editor.

"Subsequently to the date at which I wrote to you, being at Mr. Dawes', in company with Mr. Lassell, we observed *Saturn*, not, however, under more than very *moderately good* atmospheric condition. *I saw* nothing to alter my impression of the configuration or position of the shadow; but MM. Lassell and Dawes both *thought* it did touch the outer ring, giving, however, respectively, considerably different estimates of the amount.

"Inclined to distrust my own sight when it did not agree with two observers of such eminence, I was much inclined to write to you to modify the terms of my memorandum, but a *repeated* view of the appearance again at my own observatory so entirely confirmed me, that I determined to let the memorandum stand, as it *was*, right or wrong, undoubtedly what *I did* see. However, I set about computing the positions of the shadow geometrically, regard being had to the relative positions of sun and earth to the plane of the ring; and I found, assisted by a *solid model*, which carefully represented the measurements of the planet, and was fixed on the polar axis of my telescope, so as to give it with tolerable accuracy, the necessary inclination to the sunshine, that the shadow would (on the supposition that the rings *were in one plane*) reach *half way across the outer ring;* but that this part of the shadow would be so nearly *occulted* by the ball to an observer on the earth, that the minute portion which would remain would probably be insufficient to be visible under any conditions of atmosphere to be ever hoped for.

"I made due allowance in the model for the difference of polar and equatoreal diameters of the planet, which is material, as the consequence is a configuration of the curves of the *shadow*, and of

* Mr. De La Rue estimates his observatory to be 20^s west of Greenwich.

the *occultation*, favourable to the invisibility of the shadow at the epoch (February 12, 1854). I inclose a sketch of these curves to explain the position of the minute portion of shadow, not included within the curve of occultation. If this drawing be held edgeways, as the rings are now seen, a simple inspection will show that, when foreshortened, that portion becomes scarcely perceptible even *with the paper in one's hands*, instead of an object under high power in the telescope; and if the plane of the outer ring be in the least raised above the inner and the equator of the planet, it would disappear altogether *geometrically* as well as *optically*.

"I may just add that, since his return to Liverpool, Mr. Lassell has written to me; and in his letter observes that *he believes* he sees the outer ring, as I describe, free from shadow, though not with sufficient certainty to speak with entire confidence."

"*Ston Easton, April* 6, 1854."

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*Account of a Portable Observatory erected by Thomas Dell, Esq.**

"The model of my small *portable* observatory requires but very few words of explanation, and it is only in the hope that a short account of it may be of use to persons who have but small means and space at their disposal that I venture to offer it.

"The erection consists of two apartments, with a door between them. The one contains the transit instrument, which, for the purpose of economising space, is placed very much on one side; and the other the equatoreal and clock. The dimensions of the transit-room, 7 feet 6 inches in length by 5 feet 6 inches in width, and 6 feet 6 inches in height. The equatoreal-room is 10 feet in diameter, the walls being 7 feet 3 inches high, surrounded by a conical roof, which revolves on rollers let into the oak curbing, to which the walls are attached, and being very light is easily turned with one hand. The piers which carry the polar axis are of well-seasoned oak, 1 foot square, above the ground, and set in concrete to a depth of 6 feet beneath it. These I find quite steady enough, (they being, of course, perfectly independent of the floor and wall) for the telescope they carry, it having a focal length of 6 feet and $4\frac{3}{4}$ inches aperture. The polar axis consists of two pieces of oak, about 7 feet long, morticed at the top and bottom to two cross pieces, to which the metal pins, on which the whole turns, are attached, and after being put together, were accurately turned in a lathe.

"The telescope moves on an axis in the manner of a transit instrument in the centre of the axis, and thus no counterpoise is required. The whole of the building, with the exception of the curbing, which is oak, is of deal, half an inch thick; the frame-

* A model of this observatory was exhibited at the last meeting of the Society.

work resting on a foundation of brick, in which apertures are left, allowing a free circulation of air beneath the floor. The whole is *screwed* together, so that it may easily be taken to pieces; indeed, having had occasion to change my residence twice, I have removed it with me. The roof is covered with galvanised iron, and the whole is painted on the outside and varnished within. The entire cost of the observatory amounts to the sum of 37*l.* 10*s.* 5*d.*

"*March 28th*, 1854."

Observations of Comet II., 1854, *by Lieut. James S. Goodenough, H.M.S. Centaur.*

(*Communicated by the Astronomer Royal.*)

April 7th, 1854.

At Porto Grande, Island of St. Vincent, C. Verds.

Lat. 16° 51′ N.; Long. 25° 4′ W.

Greenwich Mean Time	$9^h\ 27^m\ 24^s$
Obs. Dist. from *Aldebaran*	19° 13′ 0″
Altitude of *Aldebaran*	27 30 0
Altitude of Comet	8 15 0

There was only time for a single observation, as the comet was low, and shortly after was hid by clouds.

Index Corr. + 20″; Height of Eye, 18 feet.

April 8th, at Sea.

Lat. 17° 20′ N.; Long. 24° 30′ W.

Greenwich Mean Time	$9^h\ 12^m\ 39^s$
Obs. Dist. from *Sirius*	57° 5′ 40″
Obs. Dist. from *Capella*	40 33 0
Obs. Alt. of *Sirius*	44 20 0
Obs. Alt. of *Capella*	37 15 0
Obs. Alt. of Comet	12 30 0

Index Corr. + 20″; Height of Eye, 18 feet.

April 9th, at Sea.

Lat. 20° 12′ N.; Long. 23° 15′ W.

Greenwich Mean Time	$8^h\ 58^m\ 20^s$
Obs. Dist. from *Sirius*	54° 36′ 0″
Obs. Dist. from *Capella*	40 21 40
Obs. Alt. of *Sirius*	43 25 0
Obs. Alt. of *Capella*	40 20 0
Obs. Alt. of Comet	16 15 0

Ind. Corr. + 20″; Height of Eye, 18 feet.

April 10th, at Sea.

Lat. 22° 45′ N.; Long. 22° 12′ W.

Greenwich Mean Time	$9^h\ 2^m\ 44^s$
Obs. Dist. from *Capella*	40° 20′ 10″
Obs. Dist. from *Aldebaran*	13 38 10
Obs. Alt. of *Capella*	39 35 0
Obs. Alt. of *Aldebaran*	27 45 0
Obs. Alt. of Comet	13 30 0

The comet was so dim that *Sirius* (being in an inconvenient position for holding the sextant) could not be observed.

Index Corr. + 20″; Height of Eye, 18 feet.

Minima of Algol and S Cancri for 1854 (*Mean Time Paris*). By Prof. Argelander.

Minima of Algol.

1854.	h	m	1854.	h	m
May 3*	12	49	Sept. 29	14	58
6	9	38	Oct. 2	11	46
9	6	27	5	8	35
23	14	31	8	5	23
26	11	20	19	16	38
29	8	9	22	13	27
June 12	16	13	25	10	16
15	13	1	28	7	4
18	9	50	31	3	53
July 5	14	42	Nov. 11	15	8
8	11	30	14	11	57
11	8	19	17	8	46
25	16	22	20	5	35
28	13	10	Dec. 1	16	51
31	9	59	4	13	40
Aug. 3	6	47	7	10	29
17	14	49	10	7	18
20	11	38	13	4	7
23	8	27	21	18	34
26	5	15	24	15	23
Sept. 6	16	29	27	12	12
9	13	18	30	9	1
12	10	6	33	5	50
15	6	55			

" In computing this ephemeris, I assumed, as a starting point, the minimum of 1853, October 23, $10^h\ 7^m\ 37^s$ M.T., Paris, which

* The earlier minima are here omitted.

is founded upon four very consistent minima observed in October and November. Having compared this result with the minimum of 1842, September 19, $22^h\ 45^m\ 22^s$, M.T., Paris, which was deduced from twenty-two observations comprised between the years 1840–7, and which is about 1413 periods earlier, I determined the period to be $2^d\ 20^h\ 48^m\ 53^s{\cdot}46$, with the probable error $\pm\ 0^s{\cdot}2$. A strong proof of a diminution here offers itself, and I have, accordingly, in the computation of the ephemeris, assumed the period to be $2^d\ 20^h\ 48^m\ 52^s$, which cannot be very far removed from the truth. Moreover, since I have employed the equation of light, the calculated minima can deviate only very inconsiderably from the mean of the observations. I say the *mean* of the observations, since it appears to me on the whole that this period also is not very regular, and observers ought not, therefore, to be surprised to meet with individual deviations of from 15^m to 20^m. But I would request observers to dismiss from their minds the exact results of the ephemeris during the observation, so as to guard against the effects of prepossession.

Minima of S Cancri.

1854.	h m	1854.	h m
May 6	1 8	Oct. 23	18 14
15	12 45	Nov. 2	5 51
Aug. 27	20 32	11	17 28
Sept. 6	8 9	21	5 5
15	19 46	30	16 42
25	7 23	Dec. 10	4 19
Oct. 4	19 0	19	16 56
14	6 37	29	3 33

"I have also assigned the minima which occur in the daytime, since the epochs cannot be uncertain to the extent of more than an hour, and, even when the observation of the exact minimum is not practicable, it is always interesting to follow carefully the increase or diminution of brightness. Further, I would recall to mind that the variable *S Cancri* discovered by Mr. Hind is in *Præsepe*, whose position and comparison stars I have given in the *Astronomische Nachrichten*, vol. xxxvi., p. 69. But the position of the star *e* is there erroneously assigned.* It should be

1800. $8^h\ 32^m\ 23^s$ $+19°\ 30'$ 1850. $8^h\ 35^m\ 15^s$ $+19°\ 20'$

e precedes the variable star $7^s{\cdot}20$, and is situate $14'\ 2''$ more to the south."

Captain Shea continues his observations of the Solar Spots, noting their positions on the disk by means of diagrams. He remarks that, during the nineteen days which followed the 19th of February of the present year, not a single spot was visible, although the sun was clearly observed.

* See also *Monthly Notices*, vol. xiii. p. 85.

Observations of the Solar Spots made at the Observatory of Berne during the year 1853. By Prof. Wolf.

1853.	Days of Observation.	Days free of Spots.	Number of new Groups during the Month.
January	21	0	14
February	15	0	10
March	24	1	9
April	21	0	9
May	27	0	8
June	20	0	9
July	27	0	11
August	30	0	14
September	24	1	11
October	24	0	9
November	14	0	6
December	15	0	7
	263	2	117

The following table contains a synopsis of the condition of the sun in respect to the spots during the last five years, one-tenth of the number of spots being added to the number of groups corresponding to each day's observation (in order to take into account the magnitude of the groups):—

	1849.	1850.	1851.	1852.	1853.
January	17	10	9	8	4
February	14	10	10	6	5
March	10	9	7	7	4
April	11	4	6	7	5
May	10	5	7	5	4
June	10	11	6	5	5
July	9	5	3	5	5
August	7	7	6	4	5
September	10	9	7	4	3
October	9	9	6	10	5
November	12	5	6	6	3
December	10	5	7	5	3
Annual Number	129	89	80	72	51

"These numbers indicate the approach of a minimum, which, I feel confident, will occur about the year 1855 or 1856, when, according to my determination of the period of the solar spots, such a minimum might be expected."

Sir Francis Beaufort recently forwarded from the Admiralty a very beautiful chart of the path of Comet II., 1853, as seen at Lord Howe's Island (lat. 31° 31′ 38″ S. and long. 159° 5′ 21″ E.), which was executed by Mr. J. Glen Wilson, H.M.S. Herald. The position of the comet for each day was laid down from angles taken with a sextant between it and the stars *Orion*, *Procyon*, and *Sirius*. The chart exhibits the course of the comet through the stars from the 1st to the 8th of May, when it ceased to be visible.

Elements of Amphitrite. By M. Yvon Villarceau.

Epoch, 1854, March 0·0, M.T. Paris.

	°	′	″	
Mean Anomaly	114	36	54·58	
Longitude of the Perihelion	64	50	22·81	Mean Equinox of 1854, March 0·0.
Longitude of Ascending Node	356	20	34·94	Mean Equinox of 1854, March 0·0.
Inclination	6	6	19·69	
Angle of Excentricity	4	34	47·04	
Mean Diurnal Motion			864″·3666	
Semi-major Axis			2·5637307	
Period of Revolution			4^{yrs}·104962	

These elements are founded on the observations of the planet made at the Royal Observatory of Paris during the month of March, including the two original observations of Regent's Park. The method employed is that which is explained in the *Connaissance des Temps* for 1852. Nine normal positions of the planet were made use of. The following is a comparison of the elements with three of these positions:—

	Obs. − Cal.	
	Δ R.A.	Δ Decl.
	s	″
March 1·5	+0·22	+0·9
12·5	+0·13	−1·7
27·5	−0·24	−1·6

In a note upon the comet recently observed, which appears in the *Comptes Rendus* for April 3, 1854, M. Laugier states that M. Alfred de Menciaux, a gentleman residing near Damazan, in the south of France, announced to him that, on the 23d of March, about four o'clock in the *morning*, he perceived a magnificent comet situate due east. The vertical of the comet appeared to be a little more northerly than that of the sun at rising. The tail was almost perpendicular to the horizon, but inclined slightly towards the north. M. Laugier found that a corresponding position of the comet, which afterwards became generally visible on the *evening* of the 29th of March, computed from the elements of its orbit, as deduced by him, afforded a satisfactory account of the observation of M. Menciaux.

ERRATUM.

The *date* which Mr. Hippisley assigned to his observation of *Saturn*, of which an account appeared in the *Monthly Notice* for March, was inadvertently omitted in the printing of the paper. Mr. Hippisley stated in his communication that the observation was made on the 12th of February, 1854.

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